Predictive Analysis for Delivery Management

Prepared by:
Karen Urschel, Mfg FSR, District East
Bill Gillen, Process Manager, District Ea
Joe Harris, SME, DCMA Indianapolis
and input from lots of other talented

Date: January 2004

Purpose of Training

Provide CMOs with an understanding of Predictive Analysis concepts, focusing on Delivery Management, including tools and examples that will enable CMOs to provide value-added analysis to their customers

Learning Objectives

Upon completion the student will *understand the following* regarding *Predictive Analysis:*

- **Importance to their customers**
- **Importance to future of DCMA as an agency**
- **Applicability to their jobs**

Training Operating Guidelines

- **Be on time from breaks**
- **Everyone participates, has an equal voice**
- **One speaker at a time**
- **Be respectful of others – even when you whisper to your neighbor, it is distracting to others.**
- **Take a moment to Vent if you need to but then lets move on**
- **Make pagers/cell phones silent**
- **Manage your own energy - feel free to move about if you need to.**
- **Speak loudly and clearly**
- **Ask Questions**
- **Have fun!**

DCMA
Defense Contract Management Agency

Topics

- *Predictive Analysis Overview*
- *Operations Management and Production Planning and Control: A Review of the Basics*
- *Manufacturing Processes*
- *Understanding Schedules*
- *Delivery Management: Surveillance and Analysis*
- *Delay Notification and Responses to Customer Requests*

DCMA
Defense Contract Management Agency

Predictive Analysis Overview

Predictive Analysis for Delivery Management

- Predictive analysis comes after you have done your surveillance and gathered information. The purpose of this training is to prepare you for your plant visits, provide you an understanding of what to look for, what questions to ask, what data to review.

- Then you can do your analysis, and from that analysis, comes your 'special knowledge' which allows you to make professional predictions or forecasts of what is going to happen in the future.

- The customer relies on us to provide that insight. That is truly the job we were hired to do.

DCMA
Defense Contract Management Agency

What is our role?

- **Provide our customers with timely and useful predictive *insights* and analysis.**

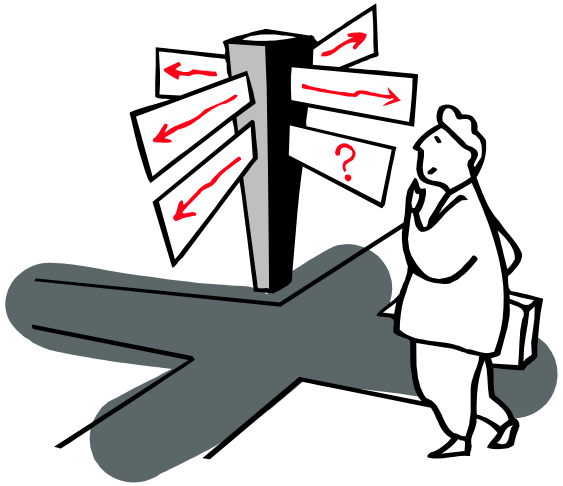
- **Predict cost/schedule/technical performance *risks and impacts.***

- **Provide our customers with suggested *Risk Mitigation & Corrective Action Strategies.***

DCMA
Defense Contract Management Agency

Being Predictive

- **Predictive Analysis**
  - ✓ ***Why?***
  - ✓ ***What is it?***
  - ✓ ***How?***



DCMA
Defense Contract Management Agency

Predictive Analysis

Why is it needed?

- **Provide relevance**
  - ✓ ***Historical data has some value***
  - ✓ ***Need to tell PM what they do not already know***

If You Think Change Is Difficult,
Try Irrelevancy

Why This Is Important

- We should not report old news (non-value added)

- Our on-site surveillance of program-specific processes and analysis enables us to deliver valuable insight to the program manager

- We analyze cost, schedule, and technical performance and predict probable outcomes to support our customer

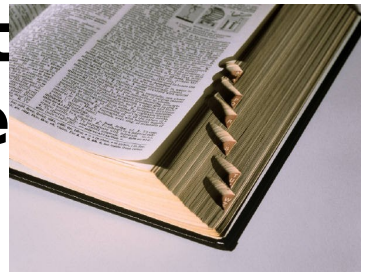
- This allows the customer to make mid-course adjustments to mitigate these outcomes

DCMA
Defense Contract Management Agency

Predictive Analysis

What is it?

- **Data- information, esp. information organized for analysis or used as t basis for decision-making (Webste**



- **Analysis- to study closely or systematically: examine, investigate (Roget's II)**

- **Predictive- to state, tell about, or make known beforehand, esp. on the basis of special knowledge (Webster's II)**

DCMA
Defense Contract Management Agency

Predictive Analysis

What is it?

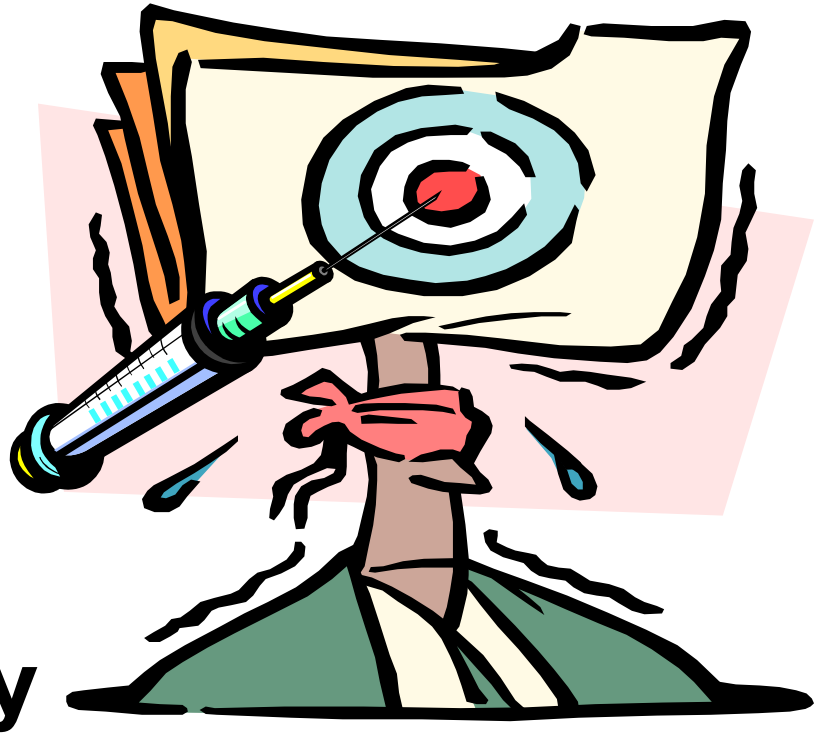
Predictive analysis is the *collection, examination* and *synthesis* of information and data from our on-site presence which states (in terms of future cost, schedule and performance) *what we think will happen* based on our *special knowledge* of the supplier and program

DCMA
Defense Contract Management Agency

Predictive Analysis

What Predictive Analysis IS NOT?

- ✓ Wild Guess
- ✓ Unsupported opinion
- ✓ Shot in the dark
- ✓ Crystal Ball



- ❖ It is not a certainty
  - •Our goal is to inform the right people early that can prevent the event!

Predictive Analysis

How?

- **Describe current performance**
- **Predict what performance will be in future months based on your special knowledge and WHY**
- **Describe impact of your prediction**
- **Recommend course of action to PM**

A Successful Predictive Analysis

Results In…

- A good **forecast** of deliveries based on current situation
- Better capability to address **future** issues
- Buying Activity being able to access options based on reliable information
- Protection of government's legal rights
- Better management of Depot inventory
- Improved DCMA/Contractor/PM/Buying Office Relationships
- An informed chain of command
- Buying Activity/Contractor confidence in DCMA surveillance
- Agency Credibility

A Successful Predictive Analysis Has…

-- Features --

- Information based on presence/contact with contractor personnel
- A statement concerning current product status
- A clear description of the root cause of the delay
- An assessment of remaining processes
- An assessment of corrective action needed to remedy immediate situation
- An assessment of corrective action needed to prevent reoccurrence
- Identification of actions required by both Government and Contractor
- Independent forecasts based on insight
- Conclusions
- Recommendations

DCMA
Defense Contract Management Agency

A Successful Predictive Analysis Is...

-- Attributes --

- Comprehensive
- Credible
- Informative
- Integrated
- Based on observations with best data available
- Timely (Based on end user criteria)
- Related to program/product line issues
- Typically in a Delay Notice Report or PI Report (Could be in other formats)
- Independent
- Quantitative

DCMA
Defense Contract Management Agency

Operations Management and Production Planning and Control:

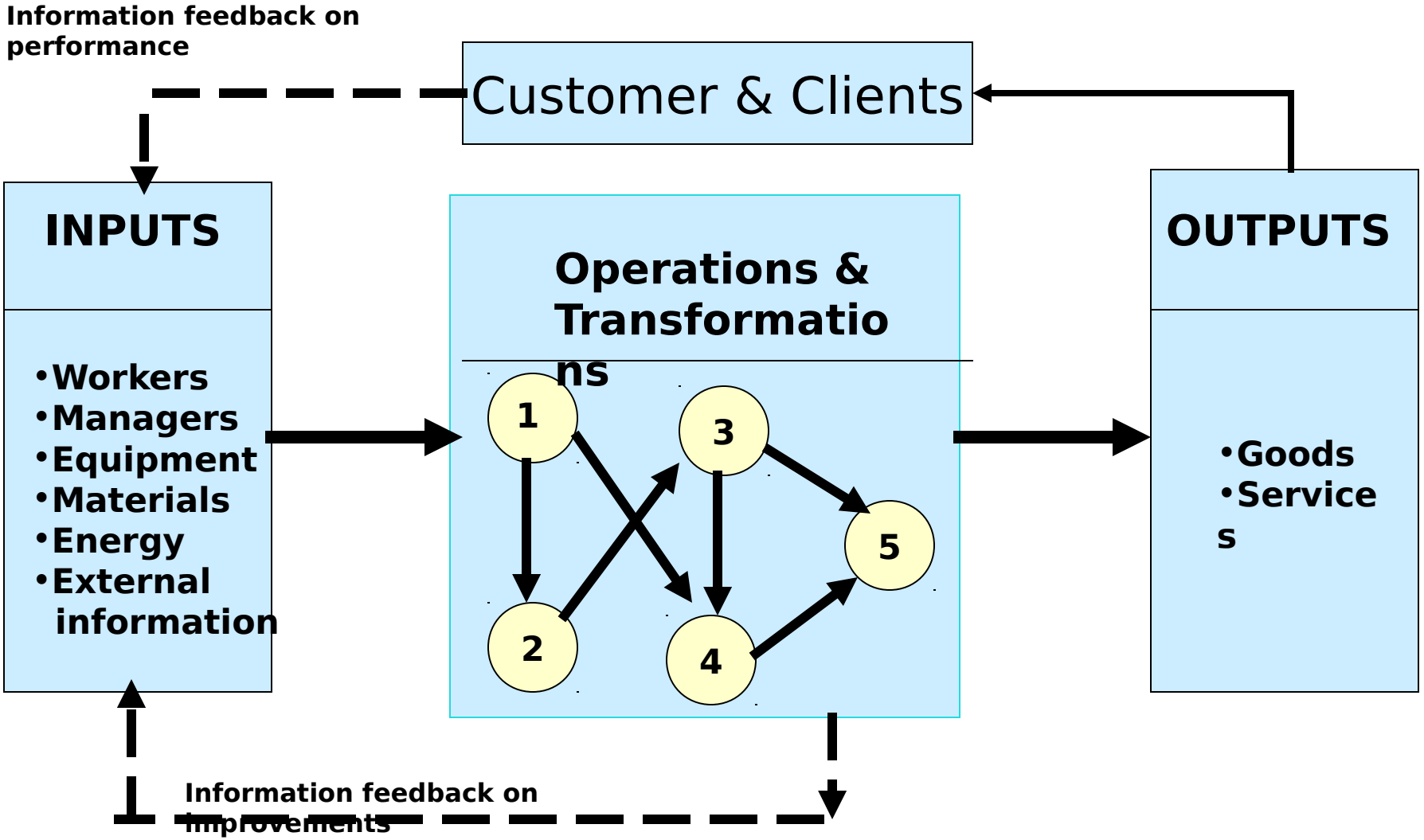
A Review of

Operations Mgmt & Production Control

- **Operations Management:**
  - the ***systematic direction and control of the processes*** that transform inputs into finished goods or services.

- **Production Control:**
  - the function of ***directing or regulating the movement*** of goods through the ***entire*** manufacturing cycle from the requisitioning of raw material to the delivery of the finished products.

Operations Management System



Operations Management

- Deals with the production of the goods and services that we buy and use every day.
- Its aim is to acquire and deploy resources efficiently to achieve an organization’s mission.
- Every organization, whether private or public, manufacturing or service, has an operations function.

Production Planning and Control

- Some of the basic elements of Production Planning and Control that all contractors must consider include:
  - Production Plan
  - Master Production Schedule
  - Material Requirements Planning
  - Capacity Requirements Planning

- Levels of sophistication of Production Planning and Control vary widely, from elaborate software systems (such as ERP Enterprise Resource Planning, MRP II Manufacturing Resource Planning), to simple flow charts and hand-written papers.

Production Plan

- Objectives:
  - Establish **production rates** that will achieve sales projections and meet commitments
  - Minimize finished inventory while avoiding customer backlogs
  - Keep the production force as stable as possible
- Major Concerns:
  - How much labor is needed
  - Variations in personnel experience
  - How much and what kind of equipment
  - How large a facility is needed
  - How much material
  - The amount of financing required

Production Plan

- Sources of information:
  - Marketing (for sales demands and forecasts)
  - Manufacturing (for capacity)
  - Engineering (for an accurate bill of material)
  - Materials (for actual inventory or backlog levels)

- The Production Plan becomes management's authorization for the Master Scheduler to convert it into a more detailed plan.

Master Production Schedule

- A **Master Production Schedule (MPS)** takes the monthly production plan rates for each product line and converts it into weekly product mix.

- Purposes of the Master Production Schedule:
  - To determine the requirements for all intermediate and purchased items, by specifying the production lot sizes for end items for each period of the planning horizon
  - To set due dates for the completion of production orders.
  - To provide the basis for determining the resources required to support the production plan.

Master Production Schedule

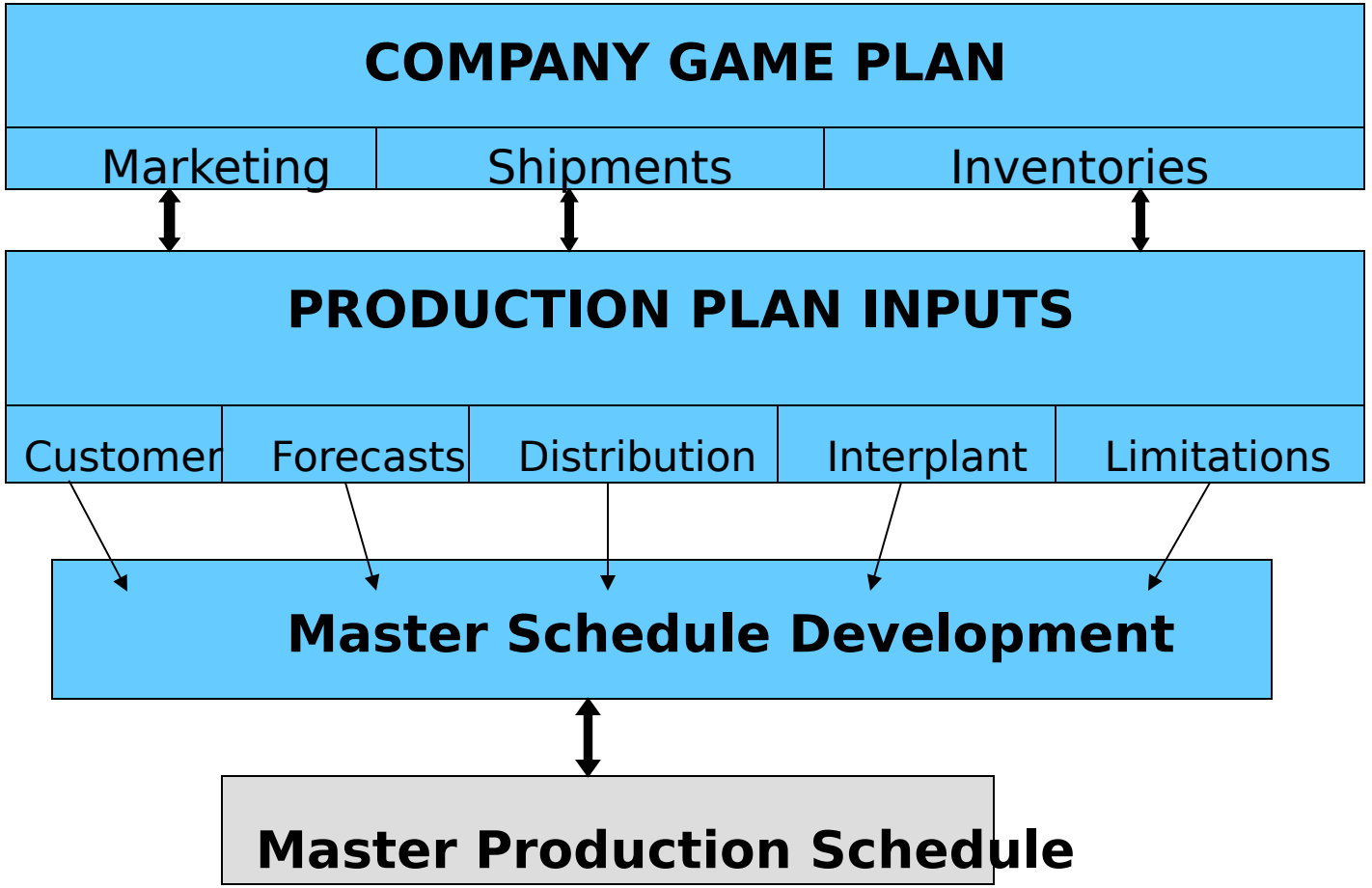
- A master schedule format contrasts the total demands (forecast and actual customer orders) with total supply (on hand inventory).
- It displays the released, planned, and firm planned orders (pending release) in quantity by required delivery date.
- The MPS drives the shipping schedules, assembly schedules, component schedules, work center schedules, vendor schedules, storeroom schedules and packaging schedules.

Master Production Schedule

- The Master Scheduler's responsibilities include:
  - Converting the monthly production plan into weekly production schedules for each product
  - Balancing production supply with constantly changing customer demands
  - Utilizing the company's resources to maximize the company profits

The Master Scheduler is an excellent source of information in your surveillance efforts!

Developing The Master Schedul



Material Requirements Planning

- Materials Requirements Planning encompasses 3 principle areas:
  - **Plan and Control inventory**
    - Order right part
    - At the right time
  - **Priority control**
    - Order with right due date
    - Keep due date valid
  - Input to capacity control
    - Accurate load
    - Complete load
    - Sufficient time span (visibility)

This is where the IS should look to insure DX and DO ratings are applied and adhered to.

Material Requirements Planning

- Inputs include:
  - Inventory record file
  - Forecasts subject o independent demand
  - Master production schedule
  - Orders for components external to plan
  - Product structure file (bill of material)

- Outputs include:
  - Order placing
  - Rescheduling planned orders
  - Rescheduling firm orders
  - Increasing/decreasing quantities
  - Cancellation
  - Item status

Capacity Requirements Planning

- Capacity Management is the function of establishing, measuring, monitoring, and adjusting limits or levels of capacity in order to execute manufacturing schedules.
- Capacity Requirements Planning is the activity of balancing the amount of work to be done with the manufacturing resources available, including:
  - **machines,**
  - **people, and**
  - **physical resources**
- Short-range capacity planning is where customer priorities, such as **DX-DO ratings** appear, and where process constraints are projected.

Capacity Requirements Planning

- Capacity requirements planning analyzes the MPS to determine the existence of critical manufacturing facilities that are potential **bottlenecks.**
  - Example: Critical work stations are those that **limit output** because the need to use them frequently exceed their capacity.
    - If a critical work station has 200 hours of capacity per week and, for some reason, only 150 hrs are used this week, the 50 hrs of usage is **lost**; they cannot be used next week if 250 hrs of usage is needed.
    - Critical work stations can be identified fairly easily by observation or from performance records.

Lost hours on critical work stations impact delivery forecasts because they cannot be 'made up' without overtime or extra shift.

Capacity Requirements Planning

- Key Terms:
  - **Capacity** – Specific resources, including labor, machines, and facilities, needed to build a product.
  - **Load** – The amount of work scheduled to be completed by these resources.
  - **Capacity Planning** – A time-phased scheduling and loading system that causes capacity to be effectively used to meet the load requirements.

- Factors that affect capacity are:
  - Planned hours of work per week.
  - Set-up and tear-down time.
  - Preventive maintenance program time.
  - Tools and materials availability.
  - Scrap or yield.
  - Efficiencies related to labor skills.
  - Re-work time.
  - Machine-up time.

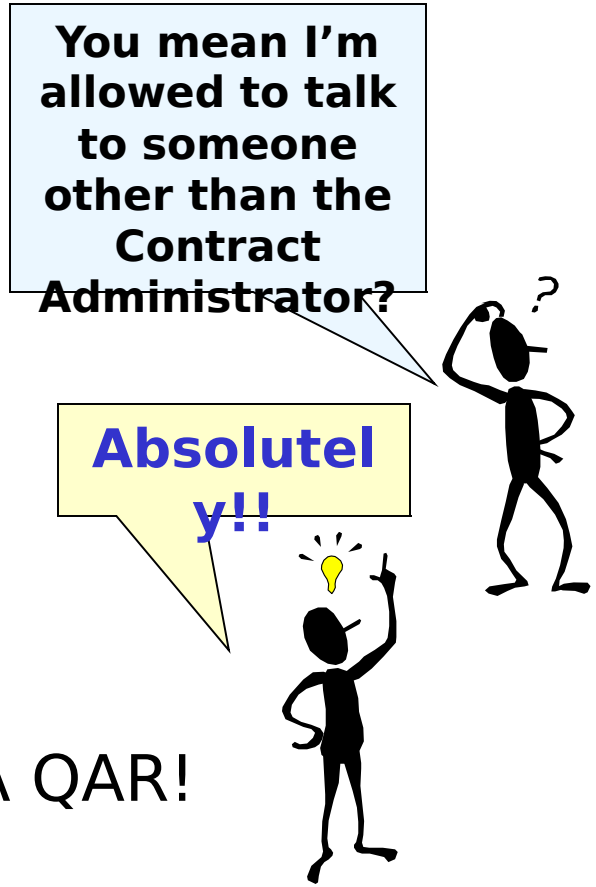
Capacity constraints and lost hours must be considered when predicting future performance, i.e. revised delivery forecast dates.

Manufacturing System POCs

- Are you talking to the **person(s)** who can answer your manufacturing system questions for surveillance purposes?
  - The Contractor's Contract Administrator can probably give you shipping information or tell you if a delay is expected, but can he/she provide enough details so you can make your own assessments?
    - Not likely
      - **Who can answer your questions?**
        - » **Next slide . . .**

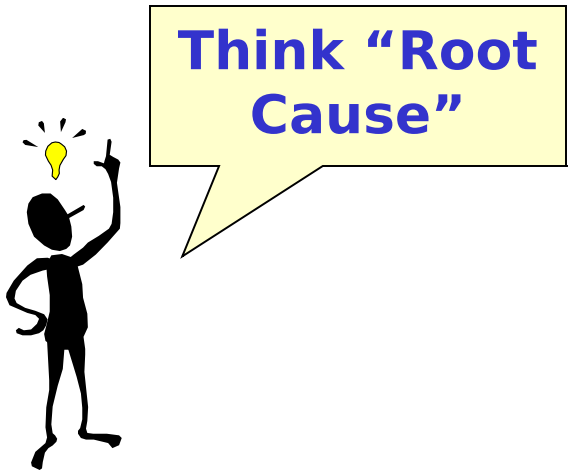
Manufacturing System POCs

- Director of Manufacturing
  - Materials Manager
    - Purchasing Manager
    - Inventory Control Manager
  - Plant Manager
    - Material Handling Foreman
    - Manufacturing Engineering Manager
    - Machine Shop Foreman
    - Assembly Foreman
    - Master Scheduler/Planner
- Don’t forget to include the DCMA QAR!



Production Planning & Control

- The IS should be familiar with some of the reasons Production Planning and Control fails in defense contractor's environment.
  - **Unrealistic contract deliverable due dates.**
  - **Premature release of incomplete or unstable engineering designs.**
  - **Inaccurate Bills of Material.**
  - **Unrealistic Capacity Planning.**
  - **Invalid Purchase Order due date.**
  - **Late issuance of Purchase Orders.**
  - **Invalid Work Order due dates.**



DCMA
Defense Contract Management Agency

Manufacturing Processes

Manufacturing Processes

- One way to classify manufacturing processes is by the objective of the process.

- In converting raw material to finished goods, the objective usually is one or more of the following:
  - **Change the material's physical properties.**
  - **Change the material's shape.**
  - **Machine parts to a fixed dimension.**
  - **Obtain a surface finish.**
  - **Join parts or materials.**

The more you learn about your contractor's processes, the better assessments you can provide.

Technical Classification of Manufacturing Processes

Processes for Changing Physical Properties

- Chemical Reactions
- Cold Working
- Hot Working
- Heat Treatment
- Refining/Extraction
- Shot Peening

Technical Classification of Manufacturing Processes

Processes for Changing the Shape of Materials

- Casting
- Stretch Forming
- Rolling
- Explosive Forming
- Crushing
- Piercing
- Powder Metal Forming
- Spinning
- Extruding
- Torch Cutting
- Electroforming
- Bending
- Forging
- Roll Forming
- Drawing
- Shearing
- Plastics Molding
- Electrohydraulic Forming

Technical Classification of Manufacturing Processes

Processes for Machining Parts to a Fixed Dimension

Traditional Chip Removal Processes

- Turning
- Broaching
- Drilling
- Hobbing
- Sawing
- Shaping
- Grinding
- Reaming
- Planing
- Milling
- Boring
- Routing

Technical Classification of Manufacturing Processes

Processes for Machining Parts to a Fixed Dimension

Nontraditional machining processes

- Ultrasonic Machining
- Optical Lasers
- Plasma-Arc Machining
- Electron Beam Machining
- Electrochemical
- Abrasive Jet Cutting

Technical Classification of Manufacturing Processes

Processes for Obtaining a Surface Finish

- Polishing
- Metal Spraying
- Electroplating
- Painting
- Lapping
- Barrel Tumbling
- Super Finishing
- Abrasive Belt Grinding
- Sanding
- Honing

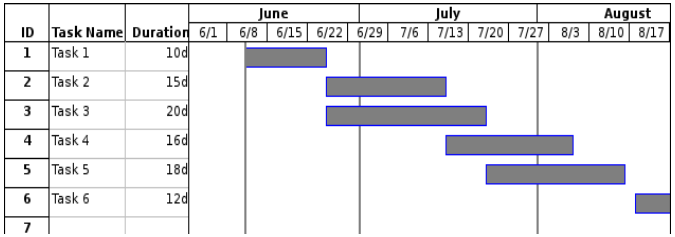
Technical Classification of Manufacturing Processes

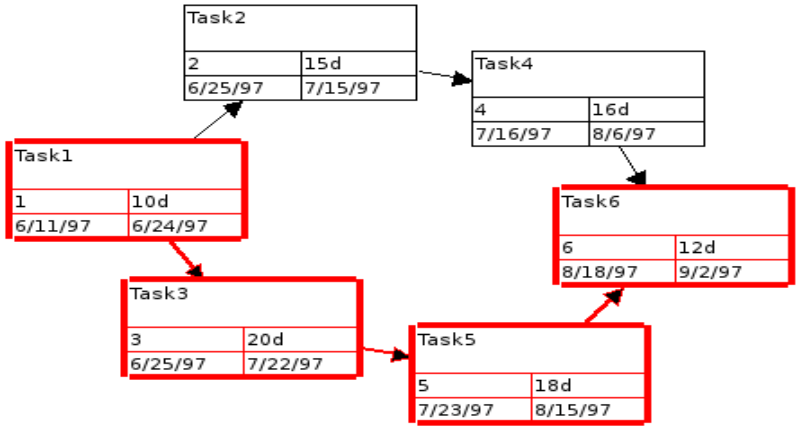
Processes for Joining Parts or Material

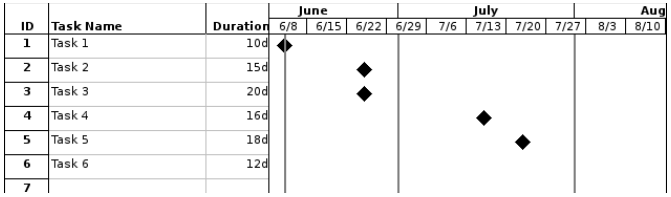
- Welding
- Riveting
- Plugging
- Pressing
- Brazing
- Adhesive Joining
- Soldering
- Screw Fastening

TIP: You can learn more about any of these processes via the internet or your public library.

Understandi ng





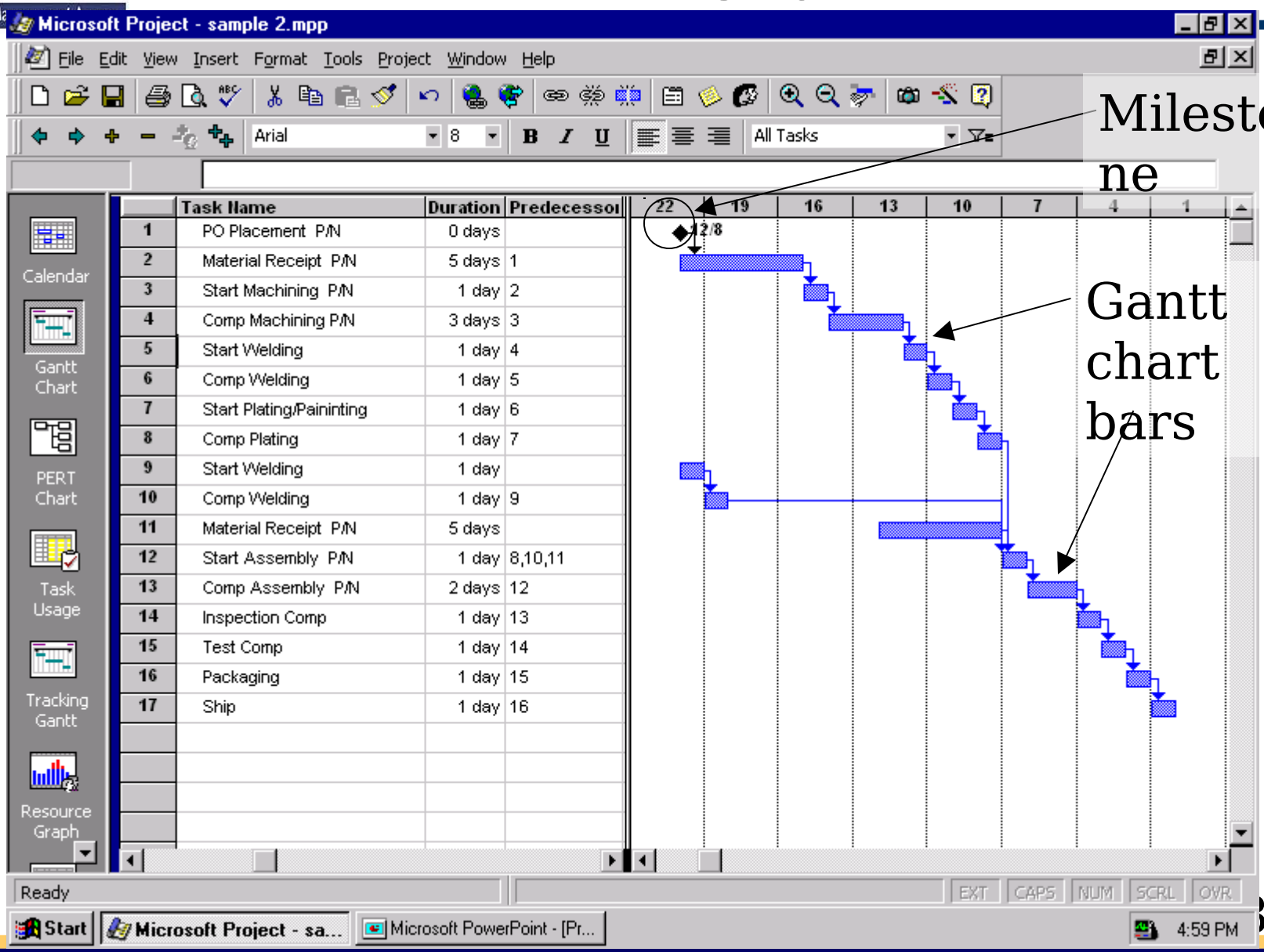


DCMA
Defense Contract Management Agency

Milestone and Gantt Charts

- A **Milestone chart** shows discrete events on a timeline. A Milestone has a duration of 0 days. The amount of time needed for a task may be shown by milestones such as “begin task” and “end task.” Milestone charts are useful for determining critical dates and events in the program
- The **Gantt chart** is a timeline chart. It clearly shows when each task is to begin, the time it will take to complete each task, and which tasks will be going on simultaneously. The contractor may use more than one level of Gantt chart. One chart may show the whole program or contract from beginning to end. Another may show two or three weeks' activities, or the efforts of a sub-contractor. Another might show more detailed activity, or even the current week's tasks.
- Milestones may be included with timeline charts.

Sample Milestone and Gantt Chart


Microsoft Project - sample 2.mpp
File Edit View Insert Format Tools Project Window Help
Arial 8 All Tasks
Calendar
Gantt Chart
PERT Chart
Task Usage
Tracking Gantt
Resource Graph
Task Name | Duration | Predecessor
1 PO Placement P/N | 0 days
2 Material Receipt P/N | 5 days | 1
3 Start Machining P/N | 1 day | 2
4 Comp Machining P/N | 3 days | 3
5 Start Welding | 1 day | 4
6 Comp Welding | 1 day | 5
7 Start Plating/Painting | 1 day | 6
8 Comp Plating | 1 day | 7
9 Start Welding | 1 day
10 Comp Welding | 1 day | 9
11 Material Receipt P/N | 5 days
12 Start Assembly P/N | 1 day | 8,10,11
13 Comp Assembly P/N | 2 days | 12
14 Inspection Comp | 1 day | 13
15 Test Comp | 1 day | 14
16 Packaging | 1 day | 15
17 Ship | 1 day | 16
22 19 16 13 10 7 4 1
12/8
Milestone
Gantt chart bars
Ready
EXT CAPS NUM SCRL OVR
Start
Microsoft Project - sa...
Microsoft PowerPoint - [Pr...
4:59 PM

DCMA
Defense Contract Management Agency

Understanding the Critical Path

- The critical path is a series of tasks that must be completed on schedule for a project to finish on schedule.
- Each task on the critical path is a critical task.
- Knowing which tasks are on the critical path allows you to prioritize your surveillance activities.
- Those tasks that cannot be delayed without affecting the project finish date are the critical tasks.
- As you modify tasks to resolve over-allocations (too many things to do for a given level of resources) or other problems in your schedule, be aware of the critical tasks and that changes to them will affect your project finish date.

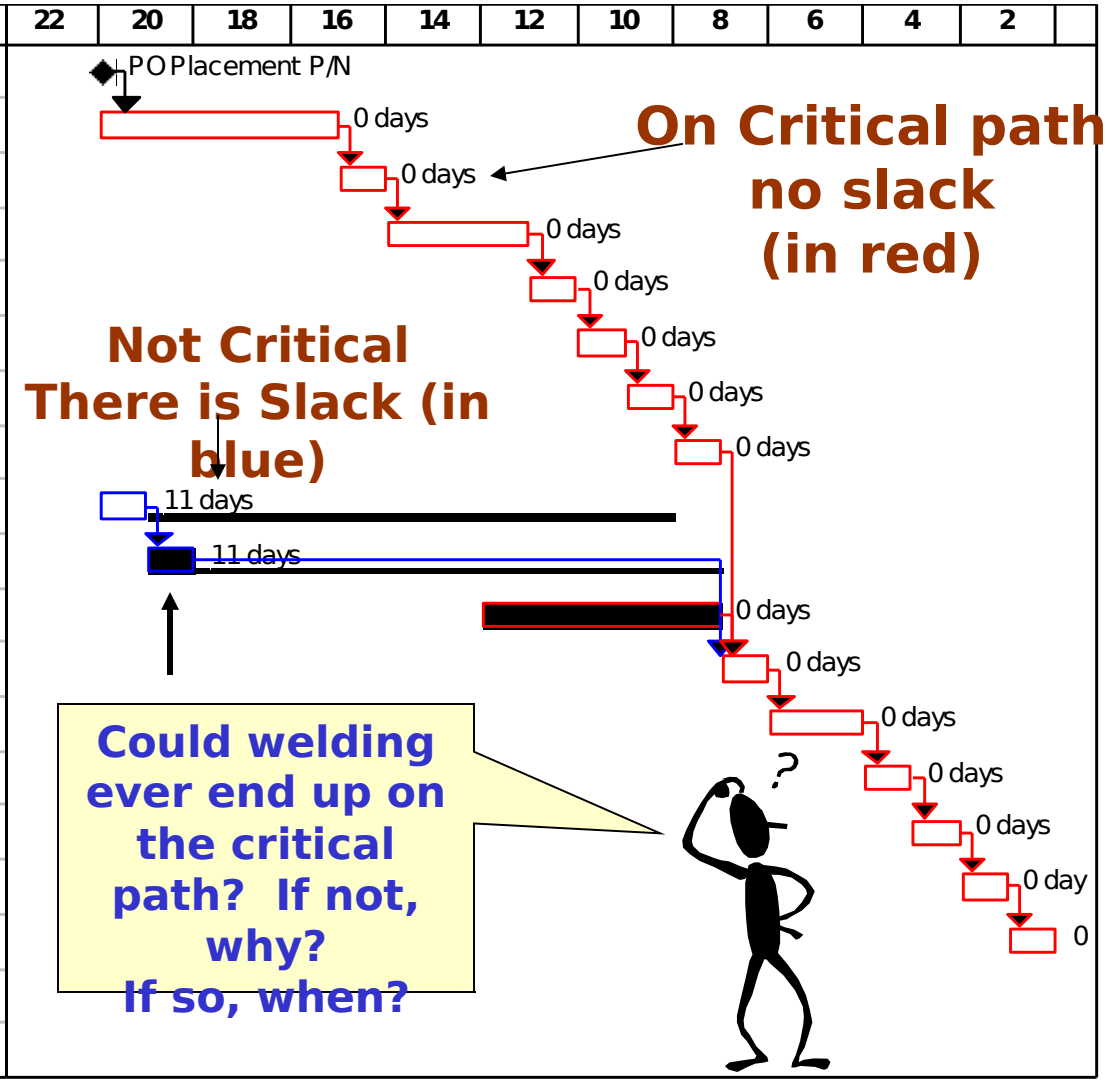
DCMA
Defense Contract Management Agency

Slack

- Most tasks in a typical project have some slack and can be delayed a little without affecting the project finish date.
- **Slack** is the amount of time a task can slip before it affects another task's dates or the project finish date.
- **Free slack** is the amount of time a task can slip before it delays another task.
- **Total slack** is the amount of time a task can slip before it delays the project finish date.
  - When the total slack is negative, the task duration is too long for its successor to begin on the date required by a constraint.

Critical Path and Slack

ID	Task Name	Duration
1	PO Placement P/N	0 days
2	Material Receipt P/N	5 days
3	Start Machining P/N	1 day
4	Comp Machining P/N	3 days
5	Start Welding	1 day
6	Comp Welding	1 day
7	Start Plating/Painting	1 day
8	Comp Plating	1 day
9	Start Welding	1 day
10	Comp Welding	1 day
11	Material Receipt P/N	5 days
12	Start Assembly P/N	1 day
13	Comp Assembly P/N	2 days
14	Inspection Comp	1 day
15	Test Comp	1 day
16	Packaging	1 day
17	Ship	1 day



How Slack Affects the Schedule

- When you analyze the tasks in your schedule, you can **look for free slack**, which is the amount of time a task can be delayed without delaying any other task.
- You can also **look at total slack**, which is the amount of time a task can be delayed without affecting the finish date of the project.
- It's important to **know where slack exists** in your schedule so you can move tasks when certain phases of the schedule have no slack and other phases have too much.
- Most schedules have some non-critical tasks with slack. You can allow these tasks to start late without affecting the schedule to compensate for tasks that take longer than planned or to help resolve resource over-allocations.

Sequence of Events

- May also be called Program Evaluation and Review Technique (PERT) chart
  - Shows how simple or complex the plan is.
  - Leads to realistic planning.
  - Organizes activities so that the goal can be reached.
  - Helps motivate and helps the team meet deadlines.
  - Provides immediate information for self-evaluation.
- Available as a “click button” in MS Project

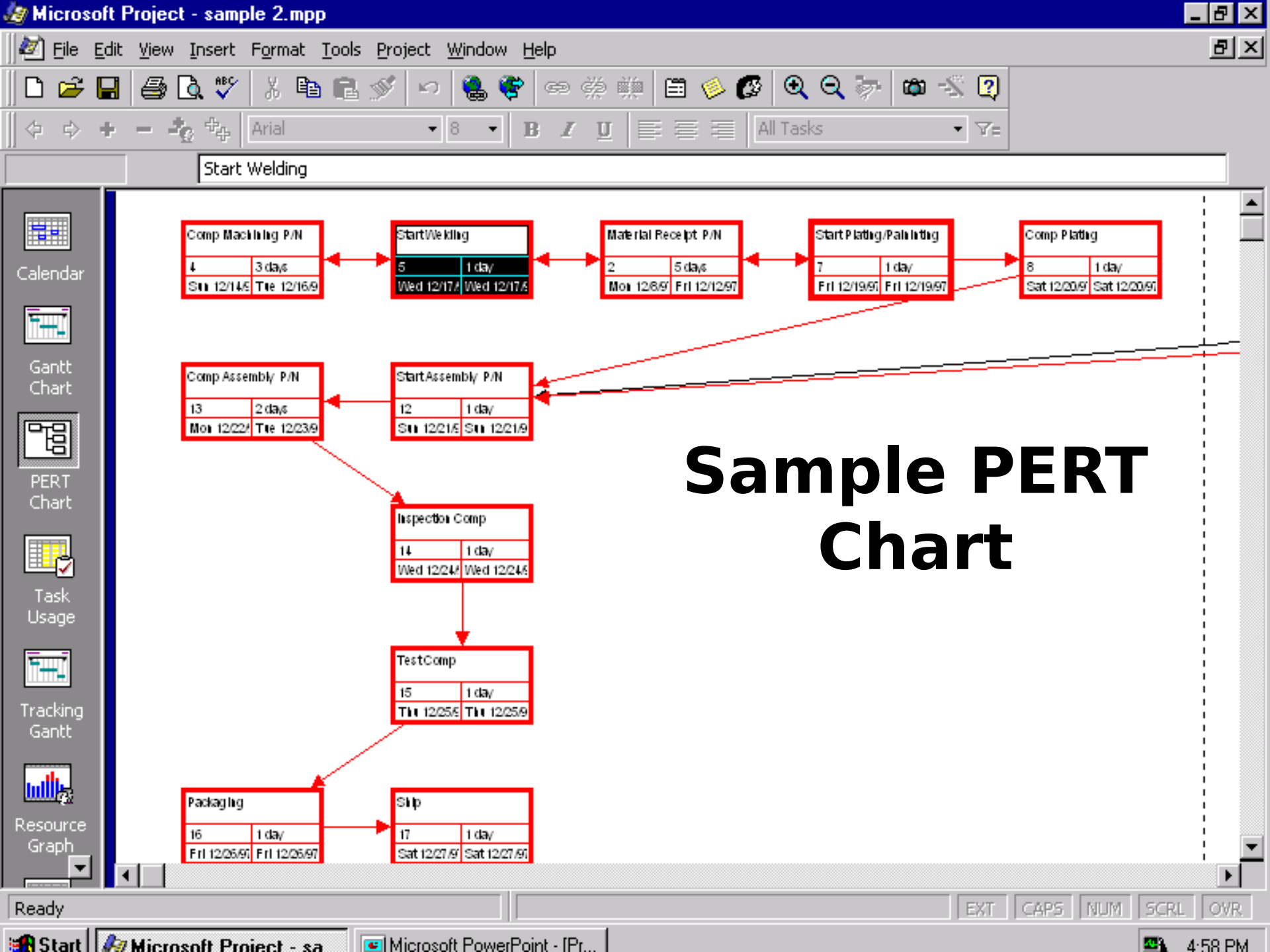
DCMA
Defense Contract Management Agency

PERT

- The **PERT** (Project Evaluation and Review Technique) chart is a sort of flowchart of all the activities or tasks in the production phase of your project.

- The relationships between activities is clearly shown, completion times and names of persons assigned can be attached to each task. Except at the beginning and end of the chart, each task should be preceded and followed by another task.

- Tasks can also branch out and travel their own paths rejoining the main path at some later point. Any milestones such as points of review or completion can be indicated as well.


Microsoft Project - sample 2.mpp
File Edit View Insert Format Tools Project Window Help
Start Welding
Calendar
Gantt Chart
PERT Chart
Task Usage
Tracking Gantt
Resource Graph
Comp Machining P/N
4
3 days
Start Welding
5
1 day
Material Receipt P/N
2
5 days
Start Plating/Painting
7
1 day
Comp Plating
8
1 day
Comp Assembly P/N
13
2 days
Start Assembly P/N
12
1 day
Inspection Comp
14
1 day
Test Comp
15
1 day
Packaging
16
1 day
Ship
17
1 day
Sample PERT Chart
Ready
EXT CAPS NUM SCRL OVR
Start
Microsoft Project - sa
Microsoft PowerPoint - [Pr...
4:58 PM

DCMA
Defense Contract Management Agency

Delivery Management: Surveillance and Analysis

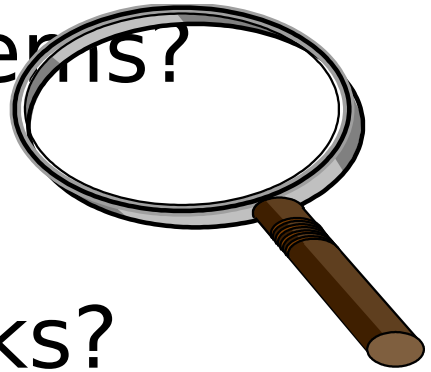
Delivery Management Surveillance

- In-plant surveillance on moderate and high risk contracts is key to predictive analysis.

- ✓Physical observations
- ✓On-site assessments and evaluations
- ✓Data analysis
- ✓Contractor interviews
- ✓Professional judgment
- ✓Independent research

Analysis Considerations

- What are the past problems?
  - Examine schedule variances
  - Assess *effectiveness* of corrective action
- What are the current problems?
  - New problems
  - Unresolved issues
- Where are the potential risks?
  - Historical data (performance indices)
  - New technologies
  - Issues/concerns identified by other team members



Analysis Considerations

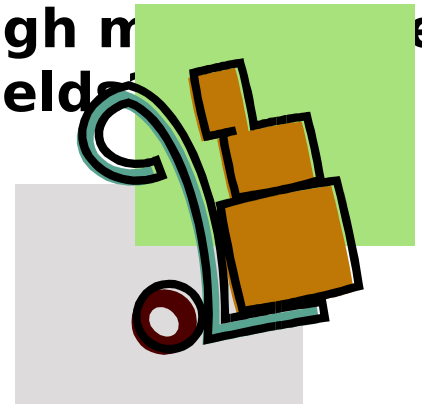
➢**Resource Analysis: *have resources been considered?***

Realistic schedules must account for resource availability which help define an accurate cost estimate and budget.

- **Duration**
  - **Number of work periods or length of time needed for available resources to do the work**
- **Work**
  - **Amount of effort needed to accomplish an activity**
- **Resources**
  - **People, equipment, facilities, etc. needed to perform the work**

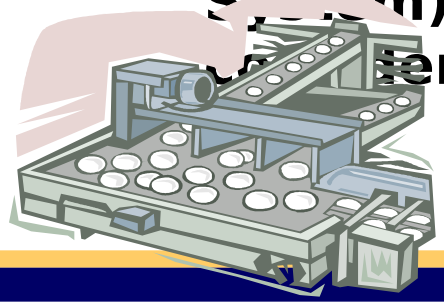
Analysis Considerations

- **Material Analysis:** ***do they have the necessary parts?***
  - **Purchasing**
    - **Are there adequate purchasing practices in place to ensure timely placement of purchase orders to meet demands?**
  - **Lead Times**
    - **Do the schedules reflect material lead times?**
  - **Yield**
    - **Has enough m[illegible]een ordered to meet process yield[illegible]**



Analysis Considerations

- **Manufacturing Analysis:** ***do they have an adequate planning and control system in place?***
  - **Build Cycles**
    - **Do the schedules represent realistic build cycles based on cycle time analysis?**
  - **Supporting Processes**
    - **Do the schedules reflect supporting processes (paint shop, etc.)?**
  - **Other Business Identified**
    - **Has the total demand been considered? Can parts in flow be traced and identified to a specific order? Have DPAS (Defense Priorities and Allocations System) contractual requirements been considered?**



DCMA
Defense Contract Management Agency

Analysis Considerations

- Schedule Analysis
  - *Understand the Supplier's Scheduling System*
  - *Typical systems include:*
    - Milestone Charts
    - Gantt Charts
      - ***Critical Path Identification and Analysis***
    - Sequence of Events (PERT) Charts
    - Other techniques, again depending on the sophistication of the contractor's Production Planning and Control System

Validate the Schedules

- Planning Documents
- Examine Performance Data
  - planned schedules
  - actual accomplishment
  - forecast schedules

Does what you see on the schedules agree with what you see on the plant floor?

Production Plans

- Comparing and verifying the flow of services or manufactured items with the supplier's production plan.
  - Reference: One Book Chapter 3.1
  - Required for all High and Moderate Suppliers

- What does that mean?
  1. Review supplier’s production plan/schedules/etc.

  2. Verify that the plan tracks with what is happening in plant (physical observations and verification)

Master Schedule Production Plan

Is contractor ahead or behind contractual schedule?
Is contractor ahead or behind his master schedule?
Should the master schedule match the contract?

RON	CID	Part Number	Clin	2003 <Jul	Aug	Sept	Oct	Nov	Dec	2004 Jan	Feb	Mar	Apr	May
22690	73350	707123-805	2			10	10	10	10	10	10	10	10	10
		Contract Cum				10	20	30	40	50	60	70	80	90
		MPS			0	10	20	16	16	12	12	18	10	0
		MPS Cum		0	0	10	30	46	62	74	86	104	114	114
		Actual		0	0	10	20	0						
		Actual Cum		0	0	10	30	30						
		Delta to Cont		0	0	0	10	0						
		Delta to MPS		0	0	0	0	-16						

MPS = Master Planning Schedule

Root Cause of Delay

- *Perform **root cause analysis***
  - For Moderate and High Risk Suppliers
  - Use process improvement techniques/statistical

    tools such as Pareto charts (sample on next slide)
  - Results of analysis can be used as basis for

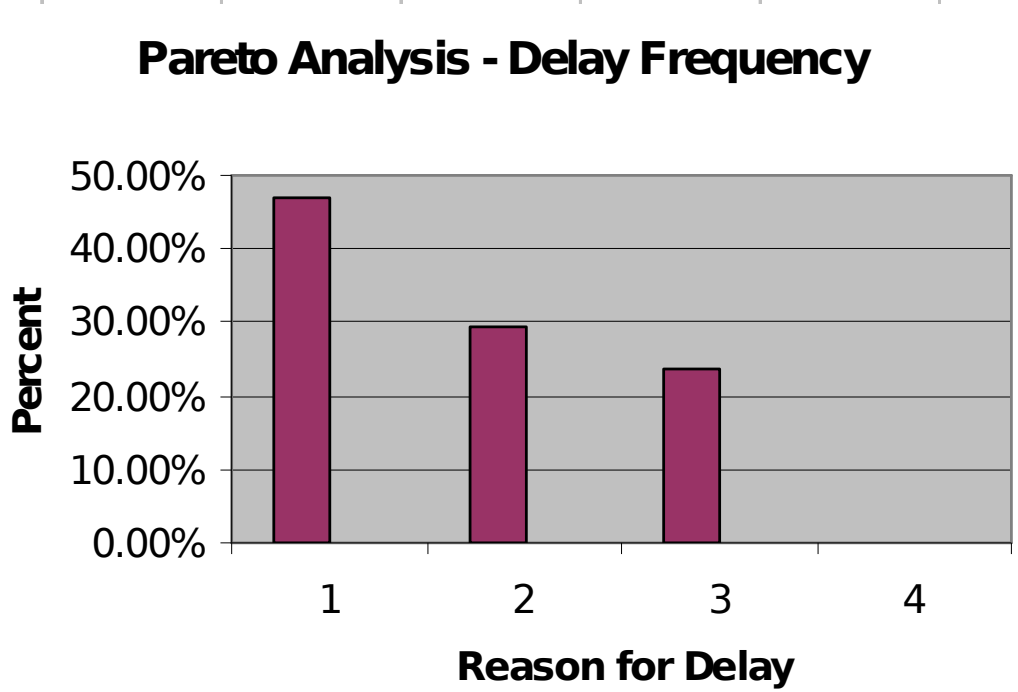
    developing a strategy for **key process** monitoring.
  - Develop, then implement strategies for eliminating or minimizing the root causes.
  - If analysis shows that a buying activity is a

This is an area where you "add value" and gain your "special knowledge"

Representative, providing documented data.

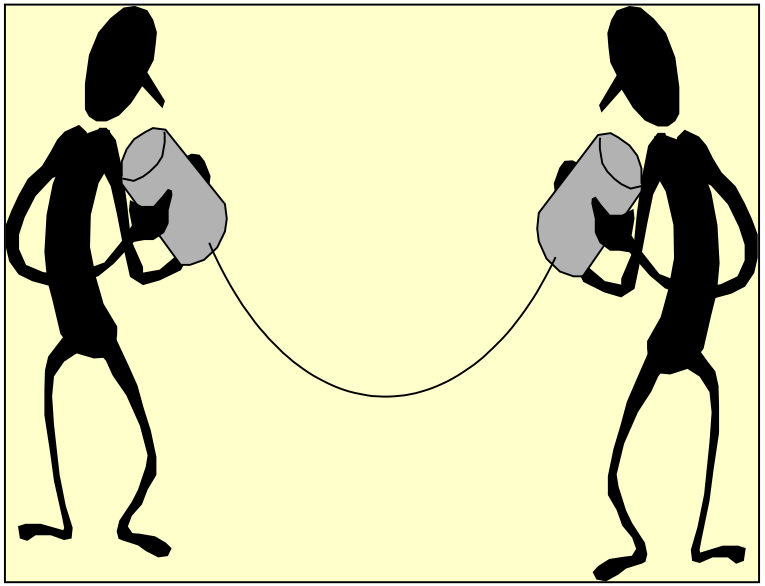
Sample Root Cause Analysis

Frequency of Delay	8	5	4		17		
Percentage	47.06%	29.41%	23.53%	0.00%			
	Purchasing	Vendor	Equipment	Leadtime			



DCMA
Defense Contract Management Agency

Delay Notification and Responses to Customer Requests

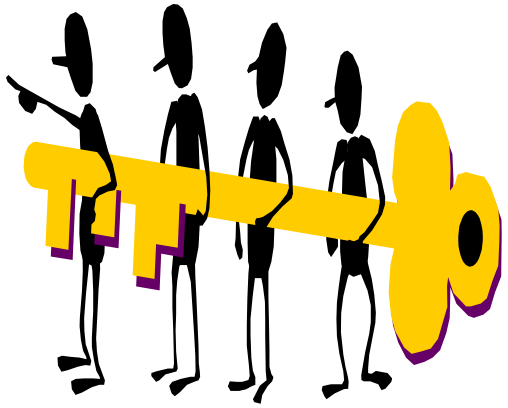


Delay Notice Reporting

- The purposes of a Delay Notice is:
  - report potential delayed deliveries
  - report contract progress
  - reference tool for the technical specialist as it relates to future delivery risk

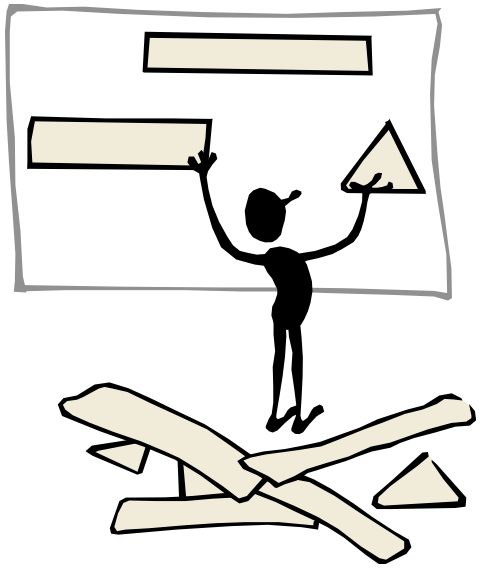
Key Elements of a Delay Report

- Regardless of reporting vehicle used, the following are key elements of delay reporting:
  - Production Status
  - Root Cause of Delay
  - Corrective Action
  - DCMA Estimated Shipment Date
  - DCMA Recommendation



Production Status

- Quantity on order
- Quantity shipped
- Unshipped Balance
- Quantity delinquent
- Progress of work in process, e.g.
  - the materials received
  - materials late
  - completion of work in process
  - operations to be performed



Be Predictive!

- Example:
  - A problem has occurred in fabrication.
    - Gather information
      - **Schedules, Interviews, observations**
    - Assess impact to this and other dependent activities or product flow
      - **Is Critical Path Impacted?**
    - Predict impact based on your special knowledge.
    - Reassess as more information becomes available, and as contractor takes corrective action.

Add Value

- *Don't Just Relay Information*
- *Phrases to Avoid*
  - The Contractor says
  - I *called* the Contractor
  - The Contractor was non-responsive so no information is available
  - The reason for delay is unknown (not allowed per policy)
- *Feedback From our Customers Indicates Weak or Missing Information*
  - No Contractor Corrective Action
  - Production Status Lacking
  - No ACO Recommendations

Corrective Action

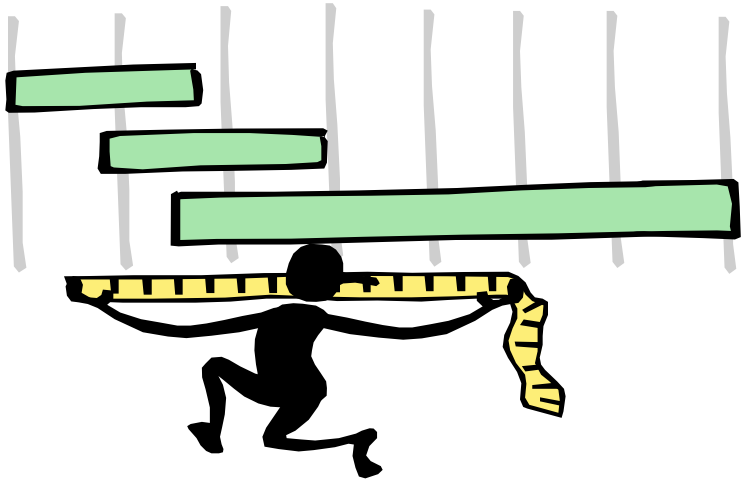
- Contractor actions to resolve the problems
  - immediate problem
  - root cause of the problem

- Industrial Specialist's evaluation of contractor actions

- Actions needed to mitigate government causes

Estimated Recovery Date

- Mention the contractor's estimate
- Provide an evaluation of that estimate
- Provide independent estimated recovery date based on insight gained through surveillance activities and predictive analysis



Recommendation

- DCMA ACO's opinion on contractual action
  - terminate for convenience
  - terminate for default
  - extend with consideration
  - extend without consideration
  - leave delinquent

Example of a thorough Delay Notice:

An onsite production surveillance visit was performed on June 5, 2003 at ABC Machine Shop. The production status on contract DAA09 03 C1234 was reviewed. The contract delivery schedule calls for the delivery of Shafts P/N 12345 as follows:

Clin 0001AA	First Article	1 ea	February 23, 2003
Clin 0001AB	Shafts	50 ea	June 30, 2003

The following is the status of production to date. The First Article was approved on March 31, 2003. The material for the production quantity has been received. The saw cut and facing operations on the production quantities have been completed. The parts for the production lot are waiting to start the turning operation. The start of the turning operation is behind the planned schedule. After the turning operation, the milling, FPI, anodizing, inspection and shipping remain to be performed.

There is an overload of parts in the turning operation. The contractor was not maintaining a machine planning system to identify capacity issues. The root cause of the problem is inadequate planning. (Continued next page . . .)

Includes item and quantity affected, progress of work in process, and root cause for delay.

Example of a thorough Delay Notice:

The contractor estimated that the production lot would ship on schedule. **The Industrial Specialist, based on an analysis of the remaining operations and contractor's workload, estimates a July 14, 2003 shipping date is a more realistic delivery date.**

The contractor will solve the immediate problem by using overtime. To prevent recurrence, the contractor will maintain plant-loading charts. The corrective action appears adequate; however, the Industrial Specialist will follow-up to verify implementation and adequacy of the corrective action.

The ACO recommends that a modification should be issued for consideration to extend the delivery date to July 14, 2003.

Includes contractor estimate, *prediction* based on analysis, Corrective action plan, assessment of corrective action, and ACO recommendation.

Workshop

- **Current Delay Notice reports**
  - *Break into groups.*
  - *Look at Delay Notice Reports.*
  - *Highlight any sentences that are predictive in nature.*
  - *Identify ways to improve by applying techniques and templates provided in this training.*
  - *Select a team member to brief results.*

Customer Requests

- Request from a buying office for specific surveillance actions and reporting
  - Typically via the Alerts Customer Priority Satisfaction System (CPSS)
  - Status request
  - Expedite/Acceleration
  - Readiness
  - Other

CPSS Response

- Same elements as Delay Notice, as applicable
  - Note: CPSS response may warrant issuance of a Delay Notice.

- Indicate any price impact as a result of acceleration request

Be Predictive!

Example of a thorough CPSS response for Acceleration:

Customer's request For Acceleration:

Please contact the contractor for acceleration of delivery on contract SP0470 03 M CP00. The contract delivery date is not until Jan 12, 2004. We now have a backorder for 1 unit with a demand for 3 units per quarter.

DCMA Response:

The supplier has begun manufacture of the full quantity of 30 Structural Panels on this contract. The panels are currently at the press brake operation. After the press brake, the structural panels will require the following operations: 1.) heat treat (outside vendor) 1 week, 2.) bonding (outside vendor) 8 weeks, 3.) finish (outside vendor) 1 week, 4.) final inspection, 5.) government source inspection, and 6.) packaging.

The supplier's estimate of accelerated delivery is that they will ship the full quantity by Sep. 20, 2003. **Based on the remaining operations, long lead time at a vendor for the bonding operation, and the supplier's total workload, the IS determines that the estimate is realistic.** The supplier is willing to expedite the delivery at no increase in price.

Check Your Report

- Did the report:
  - Answer the question (if CPSS)
    - **Customers' concerns addressed**
    - **Factual, current**
    - **Who, What, Where, Why, When, & How**
    - **Follow-up activity addressed**
  - Provide insight and predictive analysis
  - Give recommendations/options
    - **Realistic, customer centered**
  - Enable a business decision
  - Provide a clear & professional report
    - **Well written, concise, objective**

Something to Think About . . .

- Surveillance and analysis is essential in order to gain the special knowledge required for us to do our jobs.
- The output, such as delay notification and responses to customer requests for information, is evidence to the Buying Activity how DCMA support adds value.

If you were in the Customer's shoes, would you be satisfied with the level of support DCMA is providing?